

PATENT ABSTRACTS OF JAPAN

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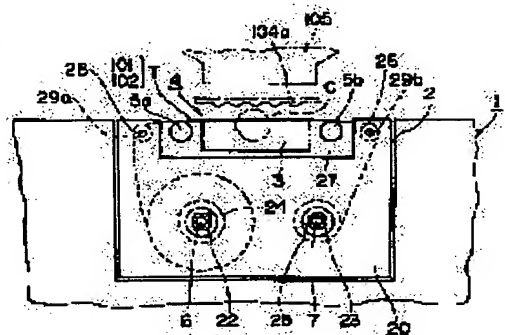
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(54) METHOD AND DEVICE FOR SUPPLYING ANISOTROPIC CONDUCTIVE FILM

(57)Abstract:

PURPOSE: To provide a method and a device for supplying anisotropic conductive film capable of automatic supply of anisotropic conductive film and improvement in workability.

CONSTITUTION: A roll type base film 102 on which an anisotropic conductive film 101 is superposed is arranged through a bonding station 4 for bonding the film 101 onto a circuit board between a pair of shafts composed of a supply shaft and winding-up shaft disposed separately on both sides holding therebetween the bonding station 4. The base film 102 is made to run from the side of the shaft 6 to the side of the shaft 7 so that the film 101 is succesively supplied to the station 4.



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CLAIMS

[Claim(s)]

[Claim 1] In the supply method of the anisotropy electric conduction film which is infixed as a binder, and heating sticking by pressure is carried out between the circuit boards by which lamination connection is made, and connects between both the aforementioned circuit boards The roll-like base film with which the laminating of the aforementioned anisotropy electric conduction film was carried out on the film plane The aforementioned anisotropy electric conduction film is arranged through the aforementioned bonding station between the shafts of the couple which becomes by the supply shaft prepared in both sides by being divided, respectively across the bonding station for carrying out bonding to the aforementioned circuit board, and the paper winding shaft. The supply method of the anisotropy electric conduction film characterized by making it run the aforementioned base film from the aforementioned supply shaft side to the aforementioned paper winding shaft side, and supplying the aforementioned anisotropy electric conduction film to the aforementioned bonding station one by one.

[Claim 2] The feeder of the anisotropy electric conduction film which it is infixed as a binder, and heating sticking by pressure is carried out between the circuit boards by which lamination connection is made, and is connected in between both the aforementioned circuit boards characterized by having the following, making it run the aforementioned base film from the aforementioned supply reel side to the aforementioned take-up-reel side, and supplying the aforementioned anisotropy electric conduction film to the aforementioned bonding station one by one. The bonding station for carrying out bonding of the aforementioned anisotropy electric conduction film to the aforementioned circuit board. The supply shaft with which winding arrangement of the roll-like base film with which the laminating of the aforementioned anisotropy electric conduction film was carried out on the film plane was carried out. The paper winding shaft by which the other end of the aforementioned base film which was prepared in the aforementioned supply shaft and the opposite side across the aforementioned bonding station, and was pulled out from the aforementioned supply shaft through the aforementioned bonding station is rolled round.

[Claim 3] The feeder of the anisotropy electric conduction film according to claim 2 characterized by providing the following. Opening corresponding to the aforementioned bonding station to the aforementioned cassette while the aforementioned anisotropy electric conduction film contains in a cassette the base film by which the laminating was carried out. The supply reel which rotates to the aforementioned supply shaft with which it was prepared corresponding to the aforementioned supply shaft, and winding arrangement of the base film of the shape of an aforementioned roll was carried out, and one. The positioning section which prepares the aforementioned paper winding shaft in which the other end of the base film of the shape of an aforementioned roll which was established corresponding to the aforementioned paper winding shaft, and was pulled out from the aforementioned supply reel side through the aforementioned opening was attached, and the take-up reel which rotates to one and by which the positioning receipt of the attachment and detachment of the aforementioned cassette is enabled at the main part side of equipment.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the method for supplying the anisotropy electric conduction film used as an electric conduction binder between the circuit boards which electrical connection is required and are stuck mutually, and its equipment.

[0002]

[Description of the Prior Art] Conventionally, an anisotropy electric conduction film is infixed in the part where the electrical connection between the circuit boards is demanded, heating sticking by pressure of this is carried out, and there is the method of sticking mutually and connecting. By this method, what carried out the laminating of the anisotropy electric conduction film on the base film is used.

[0003] Drawing 8 is what shows one conventional mode which supplies the anisotropy electric conduction film to the assembly line. the anisotropy electric conduction film 101 A laminating is carried out to the thickness of about about 35micro on the base film 102 which thickness is about about 50micro, for example, becomes with polyester film. On the base film 102, it pastes up possible [ablation] and is formed in the shape of a tape with the base film 102, and on the still more nearly annular core material 103, this is rolled the number of predetermined times and supplied in the state of this roll. And when using the anisotropy electric conduction film 101, a specified quantity drawer is carried out with the base film 102, and it is used by required length, being cut.

[0004] Drawing 6 is a flow chart which shows an example of the supply method of the anisotropy electric conduction film in the former. Then, an example of the supply method of the anisotropy electric conduction film in the former is explained in order of (1) - (5) using the flow chart shown in drawing 6 below.

(1) Pull out first the anisotropy electric conduction film 101 currently wound around the core material 103 with the base film 102, and cut this by required length.

(2) Next, arrange the base film 102 side for the anisotropy electric conduction film 101 cut by connection-ed 104a of the flexible circuit board 104 washed with the acetone etc. by (1) as a tooth back to the pasted up field of connection-ed 104a beforehand.

(3) Subsequently, apply and press down a predetermined pressure (about 30 kg/cm³) for several seconds from the base film 102 side with the tool 105 maintained at predetermined temperature (about 150-155 degrees C) (about about 30 seconds). Then, temporary adhesion of the anisotropy electric conduction film 101 is carried out in the pasted up field of connection-ed 104a.

(4) After that, a tool 105 goes up and only the anisotropy electric conduction film 101 and the base film 102 remain on the pasted up field of connection-ed 104a.

(5) Subsequently, if the base film 102 on connection-ed 104a is exfoliated, only the anisotropy electric conduction film 101 will remain on connection-ed 104a, and temporary adhesion of this anisotropy electric conduction film 101 will be completed.

[0005] And after doing in this way and carrying out temporary adhesion of the anisotropy electric conduction film 101, as another circuit board 204 by which sticks with this circuit board 104, is put together, and electrical connection is carried out is prepared and it is shown in drawing 7, on both sides of the anisotropy electric conduction film 101 for this circuit board 104 and circuit board 204, alignment of the pasted up fields is carried out in between, and it is set in a hotpress 300 in this state. Then, when it pressurizes with a hotpress 300, heating between the circuit board 104 and the circuit boards 204, actual adhesion of between the circuit board 104 and the circuit boards 204 will be carried out through the anisotropy electric conduction film 101.

[0006]

[Problem(s) to be Solved by the Invention] However, by the supply method of the anisotropy electric conduction film

in the former mentioned above, whenever it needs, from the core material 103 top, the anisotropy electric conduction film 101 is pulled out by required length, this is cut, and connection-ed 104a is supplied. For this reason, there was a trouble referred to as that workability is very bad and cannot carry out automatic supply-ization easily, either. [0007] this invention is made in view of the above-mentioned trouble, the purpose enables automatic supply of an anisotropy electric conduction film, and it is in offering the supply method of the anisotropy electric conduction film which can raise workability, and its equipment.

[0008]

[Means for Solving the Problem] In the supply method of the anisotropy electric conduction film which is infixed as a binder, and heating sticking by pressure is carried out between the circuit boards by which lamination connection is made, and connects between both the aforementioned circuit boards if this purpose is in this invention The base film which carries out the laminating of the aforementioned anisotropy electric conduction film on a film plane, and is formed in the shape of a roll The aforementioned anisotropy electric conduction film is arranged through the aforementioned bonding station between the shafts of the couple which becomes by the supply shaft prepared in both sides by being divided, respectively across the bonding station for carrying out bonding to the aforementioned circuit board, and the paper winding shaft. It is attained, as it is made to run the aforementioned base film from the aforementioned supply shaft side to the aforementioned paper winding shaft side and the aforementioned anisotropy electric conduction film is supplied to the aforementioned station one by one.

[0009] Moreover, if this purpose is in this invention, it sets to the feeder of the anisotropy electric conduction film which is infixed as a binder, and heating sticking by pressure is carried out between the circuit boards by which lamination connection is made, and connects between both the aforementioned circuit boards. The bonding station for carrying out bonding of the aforementioned anisotropy electric conduction film to the aforementioned circuit board, The supply shaft with which winding arrangement of the roll-like base film with which the laminating of the aforementioned anisotropy electric conduction film was carried out on the film plane was carried out, It is prepared in the aforementioned supply shaft and an opposite side across the aforementioned bonding station. It has the paper winding shaft by which the other end of the aforementioned base film pulled out from the aforementioned supply shaft through the aforementioned bonding station is rolled round. It is attained, as it is made to run the aforementioned base film from the aforementioned supply reel side to the aforementioned take-up-reel side and the aforementioned anisotropy electric conduction film is supplied to the aforementioned bonding station one by one. Furthermore, while the aforementioned anisotropy electric conduction film contains preferably the base film by which the laminating was carried out in a cassette The aforementioned supply shaft with which it was prepared in the aforementioned cassette corresponding to opening corresponding to the aforementioned bonding station, and the aforementioned supply shaft, and winding arrangement of the base film of the shape of an aforementioned roll was carried out, and the supply reel which rotates to one, The aforementioned paper winding shaft in which the other end of the base film of the shape of an aforementioned roll which was established corresponding to the aforementioned paper winding shaft, and was pulled out from the aforementioned supply reel side through the aforementioned opening was attached, and the take-up reel which rotates to one are prepared. And it is good to prepare the positioning section by which the positioning receipt of the attachment and detachment of the aforementioned cassette is enabled at the main part side of equipment.

[0010]

[Function] According to this, when it is made to run a base film from a supply shaft side through a bonding station to a paper winding shaft side, an anisotropy electric conduction film will also be automatically supplied to a bonding station by this run at a base film and one. Moreover, automatic bonding-ization is also attained by carrying out bonding only of this anisotropy electric conduction film by which specified quantity supply was carried out to a connection-ed at a bonding station.

[0011]

[Example] Hereafter, the example of this invention is explained in detail using a drawing. Drawing 1 is the important section block diagram of the automatic feeder of the anisotropy electric conduction film shown as one example of this invention. In addition, the laminating of the anisotropy electric conduction film used by this example is carried out to the thickness of about about 35micro like the anisotropy electric conduction film explained by drawing 7 on the base film which thickness is about about 50micro, for example, becomes with polyester film, and on the base film, this pastes up possible [ablation] and is formed in the shape of a tape with the base film 102. Therefore, by the following explanation, an anisotropy electric conduction film and a base film attach and explain the sign same as a thing of the same structure.

[0012] In drawing 1 , it has the hollow 2 for carrying out positioning ***** of the cassette 20 by this automatic feeder 1.

[0013] In this hollow 2, the guide idlers 5a and 5b which can rotate freely the couple prepared in both sides by being

divided, respectively across the bonding station 4 which allotted the bonding stage 3 for anterior opening, and this bonding station 4, the supply shaft 6 established inside the bonding stage 3, and the paper winding shaft 7 grade are arranged. Moreover, the supply shaft 6 and the paper winding shaft 7 are in the state where forcible rotation is carried out by the driving means which are not illustrated, respectively.

[0014] On the other hand, the laminating of the anisotropy electric conduction film 101 is carried out on the film plane of the base film 102, and, as for the cassette 20, the tape-like object T with which it comes to wind these around one in the shape of a roll is arranged.

[0015] If the structure of a cassette 20 is furthermore explained in full detail, the cassette 20 consists of guide idlers 29a and 29b etc. with top case half object 21A, bottom case half object 21B, the supply reel 22, and the take-up reel 23.

[0016] Moreover, top case half object 21A and bottom case half object 21B The through hole 24 which it is formed in the symmetrical form, and the supply reel 22 is positioned free [rotation], and is supported, While the through hole 25 by which a take-up reel 23 is positioned free [rotation], and is supported, and the locating hole 26 with which guide idlers 29a and 29b are positioned free [rotation], and are supported are formed respectively The notch 27 for escaping the bonding stage 3 in part is formed.

[0017] And this top case half object 21A and bottom case half object 21B become the outline flat hexahedron to which opening of the front face was carried out in the state where it was carried out by making it face mutually, is assembled by one case 21, and was assembled.

[0018] When assembled as a case 21, while making the supply reel 22 carry out specified quantity winding of the tape-like object T further again, the other end of this tape-like object T is made to fix to a take-up reel 23. In addition, while inserting the edge of the supply reel 22 in a through hole 25, making the edge of a take-up reel 23 insert in a locating hole 26, respectively and making it position, a locating hole 26 is made to carry out the insertion point arrangement of the edge of guide idlers 29a and 29b, and it is assembled simultaneously. In this case, the tape-like object T over which it is built between the supply reel 22 and a take-up reel 23 As it is turned to the outside of guide idlers 29a and 29b, and is arranged more possible [a drawer] than front opening of a case 21 and it is further shown in drawing 2 as an enlarged view of the portion C of drawing 1 among guide idlers 29a and 29b Inside (the bonding stage 3 and side which counters), the base film 102 changes into the state where the anisotropy electric conduction film 101 serves as an outside, and is arranged.

[0019] Thus, if a take-up-reel 23 side rotates in the winding direction, the tape-like object T currently wound around the supply reel 22 in connection with this will be pulled, and it will be rolled round with rotation of the supply reel 22 at a take-up-reel 23 side, and will go by the constituted case 21. Therefore, the tape-like object T will be in the state of running between guide-idler 29a of a couple, and 29b, by part for front opening by this rolling-up operation.

[0020] Moreover, when using this cassette 20, a front opening side is made to correspond to the bonding stage 3 side, and it is dropped and set in a hollow 2. Then, while the supply shaft 6 engages with the supply reel 22 really possible [rotation], a paper winding shaft 7 engages with a take-up reel 23 really possible [rotation]. Furthermore, the bonding stage 3 and guide idlers 5a and 5b are equivalent to a notch 27, and this is arranged in a notch 27 by the inside of the tape-like object T. Drawing 1 is carried out in this way, and the state where the cassette 20 was set in the hollow 2 is shown.

[0021] Drawing 4 is a flow chart which shows how to supply the anisotropy electric conduction film 101 to the connection-ed of the circuit board 104 using the automatic feeder of this invention. Operation of the anisotropy electric conduction film automatic feeder which is there, next was shown in drawing 1 is explained with the flow chart of drawing 4.

[0022] (1) For example, carry out alignment of the anisotropy electric conduction film 101 of the tape-like object T which it has let out to connection-ed 104a of the flexible circuit board washed with the acetone etc. among guide idlers 29a and 29b.

(2) Next, apply the tool 105 maintained at predetermined temperature (about 150-155 degrees C) to the bonding stage 3 from for several seconds (about about 30 seconds), apply a predetermined pressure (about 30 kg/cm³) from the tooth-back side of connection-ed 104a, and press down. Then, temporary adhesion of the anisotropy electric conduction film 101 is carried out in the pasted up field of connection-ed 104a.

(3) Subsequently, a tool 105 goes up.

(4) Next, remove connection-ed 104a of the flexible circuit board from the bonding station 4. Then, the anisotropy electric conduction film 101 exfoliates from the base film 102 with connection-ed 104a at this time, it is moved to the connection-ed 104a side, and, thereby, temporary adhesion of the anisotropy electric conduction film 101 by the side of connection-ed 104a is completed.

(5) The specified quantity rotation drive of the paper winding shaft 7 is carried out after that. And if the tape-like object

T is rolled round at a take-up-reel 23 side, the new anisotropy electric conduction film 101 will be supplied in front of the bonding stage 3, and the new flexible circuit board is arranged, it is processed similarly, and this is repeated.

(6) Further, if it finishes using the anisotropy electric conduction film 101 in a cassette 20, it will be exchanged for the new cassette 20 and work will be done similarly.

[0023] Therefore, according to the automatic feeder of the anisotropy electric conduction film according to this example, when it is made to run the tape-like object T from the supply shaft 6 (supply reel 22) side through the bonding station 4 to a paper winding shaft 7 (take-up reel 23) side, the anisotropy electric conduction film 101 will also be automatically supplied one by one to the bonding station 4 by this run at the base film 102 and one. Moreover, bonding only of this anisotropy electric conduction film 101 by which specified quantity supply was carried out can be carried out to connection-ed 104a at the bonding station 4. Automatic bonding-ization is attained by this, workability is improved, and production capacity can be raised.

[0024] In addition, while making it an open reel type, without making it store in a cassette 20 although the structure used making store the tape-like object T in a cassette 20 in the above-mentioned example was explained and equipping with the supply reel 22 really possible [rotation] on the supply shaft 6, even if it equips with a take-up reel 23 really possible [rotation] to a paper winding shaft 7, it does not interfere.

[0025] furthermore, when this bonding stage 3 becomes the obstacle of **** operation of a cassette 20 by the case where the big bonding stage 3 is used For example, as shown in drawing 5 , while establishing the bonding stage 3 in the outside of a hollow 2 with the 2nd guide idler 9a and 9b Guide idlers 5a and 5b may be formed as it can move between the inside of a hollow 2, and the bonding stages 3, and you may make it the structure of making the tape-like object T guiding to the bonding stage 3 by these guide idlers 5a and 5b. Moreover, in drawing 5 , what attached the same sign as drawing 1 or drawing 3 shows the same thing as drawing 1 or drawing 3 .

[0026]

[Effect of the Invention] When it is made to run a base film from a supply shaft side through a bonding station to a paper winding shaft side as explained above according to this invention, an anisotropy electric conduction film will also be automatically supplied to a bonding station by this run at a base film and one. Moreover, automatic bonding-ization is also attained by carrying out bonding only of this anisotropy electric conduction film by which specified quantity supply was carried out to a connection-ed at a bonding station. Therefore, workability is improved and the effect of being able to raise production capacity can be expected.

[Translation done.]

* NOTICES *

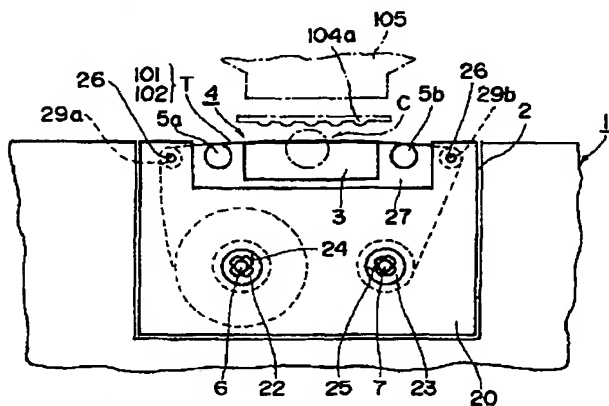
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DRAWINGS

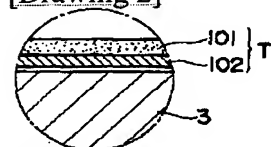
[Drawing 1]

- | | |
|-----------------|-----------|
| 1: 自動供給装置 | 7: 巻取軸 |
| 2: 凹所(位置決め部) | 20: カセット |
| 3: ホンディングステージ | 22: 供給リール |
| 4: ホンディングステーション | 23: 巻取リール |
| 6: 供給軸 | T: テープ状体 |



本発明実施例装置の要部構成図

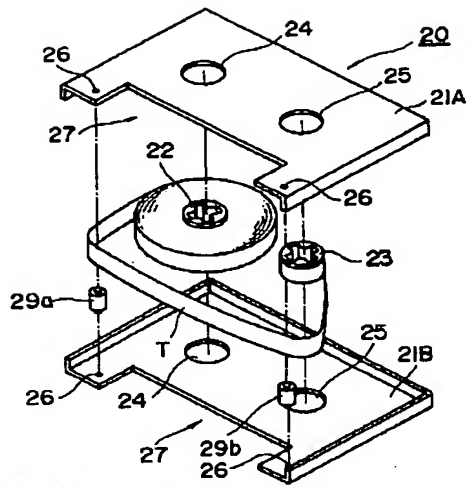
[Drawing 2]



- 101: 異方性導電膜
102: ベースフィルム
T: テープ状体

C部拡大図

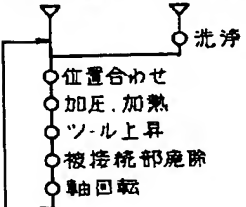
[Drawing 3]



本発明実施例装置のカセット分解図

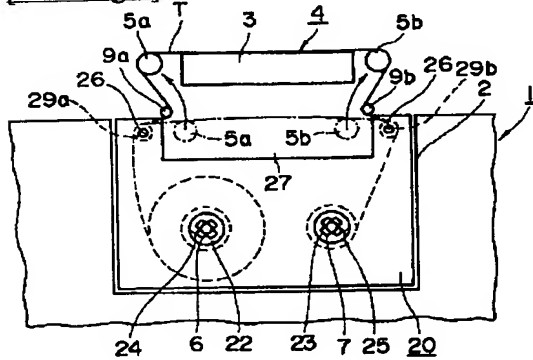
[Drawing 4]

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本発明の供給方法

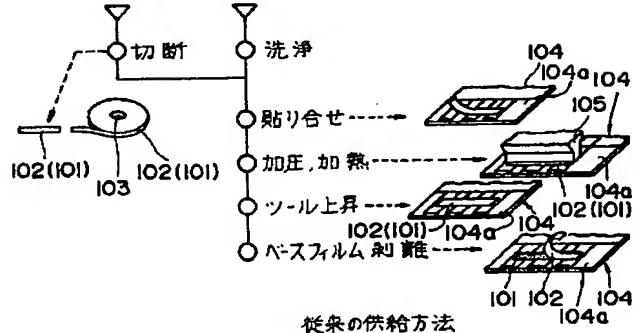
[Drawing 5]



本発明の変形例

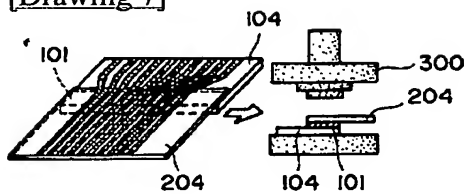
[Drawing 6]

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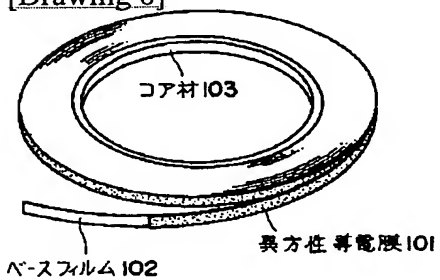
従来の供給方法

[Drawing 7]



回路基板間接続説明図

[Drawing 8]



異方性導電膜供給態様例

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